Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims

1. Cancelled.

2 (Withdrawn). The image forming apparatus as set forth in claim 1, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink,

the image forming apparatus satisfies:

$F'<1/(N\cdot R)$

($F'=F$ when an opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; and R expresses a compressibility, which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in a compressed state in the ink containing section to the ink absorbing body before the ink absorbing body is contained in the ink containing section.

3 (Withdrawn). The image-forming apparatus as set forth in claim 2, wherein

the image forming apparatus satisfies:

$D_N<F'<1/(N\cdot R)$

($F'=F$ when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where D_N(m) expresses a diameter of the nozzle of the print head.

4 (Withdrawn). The image forming apparatus as set forth in claim 1, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section,

the image forming apparatus satisfies:

$F'<1/(N'\cdot R')$

($F'=F$ when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; and R' expresses a compressibility, which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed.

5 (Withdrawn). The image-forming apparatus as set forth in claim 4, wherein

the image forming apparatus satisfies:

$D_N<F'<1/(N'\cdot R')$

($F'=F$ when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where D_N(m) expresses a diameter of the nozzle of the print head.

6 (Currently amended). ~~The image forming apparatus as set forth in claim 1~~

An image forming apparatus, comprising:

an ink containing section for retaining ink; and

an ink supplying path for supplying the ink from the ink containing section to a print head,

wherein:

the ink supplying path therein includes a filter, which generates negative pressure when the ink is supplied, the negative pressure being smaller than ink absorbing pressure of a nozzle of the print head, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink,

the image forming apparatus satisfies:

$4 \cdot \eta / D_N - |Ph| > 4 \cdot \eta / F' > |P\mu| + |Pi|$

$P\mu = (k/A) \square \{\mu \cdot L \cdot (N \cdot R)^2 / S\} \cdot Q$

(where the coefficient (k/A)=485, F'=F when an opening of the filter is circle; $F' = \sqrt{2} \cdot F$ in other cases),

where Ph (Pa) expresses a head pressure between an ink discharging throat of the nozzle of the print head and an ink supplying throat of the ink containing section; Pi (Pa) expresses a head pressure of the ink containing section which occurs when the ink is going to be supplied to the print head via the ink supplying throat when the ink containing section is filled with the ink; Pμ (Pa) expresses a pressure loss due to a viscosity resistance of the ink containing section; F(m) expresses a filtration accuracy of the filter; D_N(m) expresses a diameter of the nozzle of the print head; η (N/m) expresses a surface tension of the ink; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; R expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state to the ink absorbing body before the ink absorbing body is contained in the ink containing section; S (m^2) expresses a cross-sectional area of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state; and L expresses a length (m) of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state.

7 (Currently amended). ~~The image forming apparatus as set forth in claim 1~~

An image forming apparatus, comprising:

an ink containing section for retaining ink; and

an ink supplying path for supplying the ink from the ink containing section to a print head,

wherein:

the ink supplying path therein includes a filter, which generates negative pressure when the ink is supplied, the negative pressure being smaller than ink absorbing pressure of a nozzle of the print head, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section,

the image forming apparatus satisfies:

$4 \cdot \eta / D_N - |Ph| > 4 \cdot \eta / F' > |P\mu| + |Pi|$

$P\mu = (k/A) \cdot \{\mu \cdot L \cdot (N' \cdot R')^2 / S\} \cdot Q$

(where the coefficient (k/A)=485, F'=F when an opening of the filter is circle; $F' = \sqrt{2} \cdot F$ in other cases),

where Ph (Pa) expresses a head pressure between an ink discharging throat of the nozzle of the print head and an ink supplying throat of the ink containing section; Pi (Pa) expresses a head pressure of the ink containing section which occurs when the ink is going to be supplied to the print head via the ink supplying throat when the ink containing section is filled with the ink; Pμ (Pa) expresses a pressure loss due to a viscosity resistance of the ink containing section; F(m) expresses a filtration accuracy of the filter; D_N(m) expresses a diameter of the nozzle of the print head; η (N/m) expresses a surface tension of the ink; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; R' expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed; S (m^2) expresses a cross-sectional area of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state; and L expresses a

length (m) of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state.

8 (Withdrawn). The image forming apparatus as set forth in claim 1, further comprising:

a removable ink cartridge,

wherein:

the ink containing section is provided in the ink cartridge, and therein includes a porous ink absorbing body for retaining ink,

the image forming apparatus satisfies:

$\eta \cdot N \cdot R \cdot B > 2 \cdot \gamma \cdot h$

(coefficient $B=4.08\times10^{-4}$)

where η (N/m) expresses a surface tension of the ink; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; R expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state to the ink absorbing body before the ink absorbing body is contained in the ink containing section; h(m) expresses a head height of the ink, which is a maximum height of the ink containing section under an arbitrary orientation and is relative to the ink supplying throat in the vertical direction; and γ expresses a specific gravity of the ink.

9 (Withdrawn). The image forming apparatus as set forth in claim 1, further comprising:

a removable ink cartridge,

wherein:

the ink containing section is provided in the ink cartridge, and therein includes a porous ink absorbing body for retaining ink, the ink absorbing body

being compressed before the ink absorbing body is contained in the ink containing section, and

the image forming apparatus satisfies:

$\eta \cdot N' \cdot R' \cdot B > 2 \cdot \gamma \cdot h$

(coefficient $B=4.08\times10^{-4}$)

where η (N/m) expresses a surface tension of the ink; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; R' expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed; h(m) expresses a head height of the ink, which is a maximum height of the ink containing section under an arbitrary orientation and is relative to the ink supplying throat in the vertical direction; and γ expresses a specific gravity of the ink.

10. Cancelled.

11. Cancelled.

12 (Withdrawn). The image forming apparatus as set forth in claim 11, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink,

the image forming apparatus satisfies:

$F' < 1/(N \cdot R)$

($F'=F$ when an opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; and R expresses a compressibility, which is a volume ratio of the ink absorbing body when the ink absorbing body is

contained in a compressed state in the ink containing section to the ink absorbing body before the ink absorbing body is contained in the ink containing section.

13 (Withdrawn). The image-forming apparatus as set forth in claim 12, wherein the image forming apparatus satisfies:

$D_N<F'<1/(N\cdot R)$

(F'=F when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where D_N(m) expresses a diameter of the nozzle of the print head.

14 (Withdrawn). The image forming apparatus as set forth in claim 11, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section, and

the image forming apparatus satisfies:

$F'<1/(N'\cdot R')$

(F'=F when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; and R' expresses a compressibility, which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed.

15 (Withdrawn). The image-forming apparatus as set forth in claim 14, wherein the image forming apparatus satisfies:

$D_N<F'<1/(N'\cdot R')$

(F'=F when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where D_N(m) expresses a diameter of the nozzle of the print head.

16 (Currently amended). ~~The image forming apparatus as set forth in claim 11~~

An image forming apparatus, comprising:

an ink containing section for retaining ink; and

an ink supplying path for supplying the ink from the ink containing section to a print head,

wherein:

the ink supplying path therein includes a filter, which generates a negative pressure of not more than 2.0 kPa, which is applied to the ink supplying path when the ink is supplied, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink, and

the image forming apparatus satisfies:

$4 \cdot \eta / D_N - |Ph| > 4 \cdot \eta / F' > |P\mu| + |Pi|$

$P\mu = (k/A) \cdot \{\mu \cdot L \cdot (N \cdot R)^2 / S\} \cdot Q$

(where the coefficient $(k/A)=485$, $F'=F$ when an opening of the filter is circle; $F'=\sqrt{2} \cdot F$ in other cases),

where Ph (Pa) expresses a head pressure between an ink discharging throat of the nozzle of the print head and an ink supplying throat of the ink containing section; Pi (Pa) expresses a head pressure of the ink containing section which occurs when the ink is going to be supplied to the print head via the ink supplying throat when the ink containing section is filled with the ink; Pμ (Pa) expresses a pressure loss due to a viscosity resistance of the ink containing section; F(m) expresses a filtration accuracy of the filter; D_N(m) expresses a diameter of the nozzle of the print head; η (N/m) expresses a surface tension of the ink; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; R expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state to

the ink absorbing body before the ink absorbing body is contained in the ink containing section; S (m^2) expresses a cross-sectional area of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state; and L expresses a length (m) of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state.

17 (Currently amended). ~~The image forming apparatus as set forth in claim 11~~

An image forming apparatus, comprising:

an ink containing section for retaining ink; and

an ink supplying path for supplying the ink from the ink containing section to a print head,

wherein:

the ink supplying path therein includes a filter, which generates a negative pressure of not more than 2.0 kPa, which is applied to the ink supplying path when the ink is supplied, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section,

the image forming apparatus satisfies:

$4 \cdot \eta / D_N - |Ph| > 4 \cdot \eta / F' > |P\mu| + |Pi|$

$P\mu = (k/A) \cdot \{\mu \cdot L \cdot (N' \cdot R')^2 / S\} \cdot Q$

(where the coefficient (k/A)=485, F'=F when an opening of the filter is circle; $F' = \sqrt{2} \cdot F$ in other cases),

where Ph (Pa) expresses a head pressure between an ink discharging throat of the nozzle of the print head and an ink supplying throat of the ink containing section; Pi (Pa) expresses a head pressure of the ink containing section which occurs when the ink is going to be supplied to the print head via the ink supplying throat when the ink containing section is filled with the ink; Pμ (Pa) expresses a

pressure loss due to a viscosity resistance of the ink containing section; F(m) expresses a filtration accuracy of the filter; D_N(m) expresses a diameter of the nozzle of the print head; η (N/m) expresses a surface tension of the ink; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; R' expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed; S (m^2) expresses a cross-sectional area of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state; and L expresses a length (m) of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state.

18 (Withdrawn). The image forming apparatus as set forth in claim 11, further comprising:

a removable ink cartridge,

wherein:

the ink containing section is provided in the ink cartridge, and therein includes a porous ink absorbing body for retaining ink, and

the image forming apparatus satisfies:

$\eta \cdot N \cdot R \cdot B > 2 \cdot \gamma \cdot h$

(coefficient $B=4.08\times10^{-4}$)

where η (N/m) expresses a surface tension of the ink; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; R expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state to the ink absorbing body before the ink absorbing body is contained in the ink containing section; h(m) expresses a head height of the ink, which is a maximum height of the ink containing section under

an arbitrary orientation and is relative to the ink supplying throat in the vertical direction; and γ expresses a specific gravity of the ink.

19 (Withdrawn). The image forming apparatus as set forth in claim 11, further comprising:

a removable ink cartridge,

wherein:

the ink containing section is provided in the ink cartridge, and therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section,

the image forming apparatus satisfies:

$\eta \cdot N' \cdot R' \cdot B > 2 \cdot \gamma \cdot h$

(coefficient $B = 4.08 \times 10^{-4}$)

where η (N/m) expresses a surface tension of the ink; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; R' expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed; h(m) expresses a head height of the ink, which is a maximum height of the ink containing section under an arbitrary orientation and is relative to the ink supplying throat in the vertical direction; and γ expresses a specific gravity of the ink.

20. Cancelled.

21 (Original). An image forming apparatus, comprising:

an ink containing section for retaining ink; and

an ink supplying path for supplying the ink from the ink containing section to a print head, the ink supplying path therein including a filter,

wherein:

the image forming apparatus satisfies:

$F'=4\eta/Pm$

$Pm\leq 2000$

(F'=F when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; η (N/m) expresses a surface tension of the ink; and Pm (Pa) expresses a critical pressure of a negative pressure generated in the filter when the ink is supplied.

22 (Original). The image forming apparatus as set forth in claim 21, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink,

the image forming apparatus satisfies:

$F'<1/(N\cdot R)$

(F'=F when an opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; and R expresses a compressibility, which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in a compressed state in the ink containing section to the ink absorbing body before the ink absorbing body is contained in the ink containing section.

23 (Original). The image-forming apparatus as set forth in claim 22, wherein

the image forming apparatus satisfies:

$D_N<F'<1/(N\cdot R)$

(F'=F when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where $D_N(m)$ expresses a diameter of the nozzle of the print head.

24 (Original). The image forming apparatus as set forth in claim 21, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section,

the image forming apparatus satisfies:

$F'<1/(N'\cdot R')$

(F'=F when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; and R' expresses a compressibility, which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed.

25 (Original). The image-forming apparatus as set forth in claim 24, wherein:

the image forming apparatus satisfies:

$D_N<F'<1/(N'\cdot R')$

(F'=F when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where $D_N(m)$ expresses a diameter of the nozzle of the print head.

26 (Original). The image forming apparatus as set forth in claim 21, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink,

the image forming apparatus satisfies:

$4\cdot\eta/D_N-|Ph|>4\cdot\eta/F'>|P\mu|+|Pi|$

$P\mu=(k/A)\cdot\{\mu\cdot L\cdot(N\cdot R)^2/S\}\cdot Q$

(where the coefficient (k/A)=485, F'=F when an opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases),

where Ph (Pa) expresses a head pressure between an ink discharging throat of the nozzle of the print head and an ink supplying throat of the ink containing section; Pi (Pa) expresses a head pressure of the ink containing section which occurs when the ink is going to be supplied to the print head via the ink supplying throat when the ink containing section is filled with the ink; Pμ (Pa) expresses a pressure loss due to a viscosity resistance of the ink containing section; F(m) expresses a filtration accuracy of the filter; D_N(m) expresses a diameter of the nozzle of the print head; η (N/m) expresses a surface tension of the ink; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; R expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state to the ink absorbing body before the ink absorbing body is contained in the ink containing section; S (m^2) expresses a cross-sectional area of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state; and L expresses a length (m) of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state.

27 (Original). The image forming apparatus as set forth in claim 21, wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section,

the image forming apparatus satisfies:

$$4\cdot\eta/D_N-|Ph|>4\cdot\eta/F'>|P\mu|+|Pi|$$

$$P\mu=(k/A)\cdot\{\mu\cdot L\cdot(N'\cdot R')^2/S\}\cdot Q$$

(where the coefficient (k/A)=485, F'=F when an opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases),

where Ph (Pa) expresses a head pressure between an ink discharging throat of the nozzle of the print head and an ink supplying throat of the ink containing section; Pi (Pa) expresses a head pressure of the ink containing section which occurs when the ink is going to be supplied to the print head via the ink supplying throat when the ink containing section is filled with the ink; $P\mu$ (Pa) expresses a pressure loss due to a viscosity resistance of the ink containing section; F(m) expresses a filtration accuracy of the filter; D_N(m) expresses a diameter of the nozzle of the print head; η (N/m) expresses a surface tension of the ink; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; R' expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed; S (m^2) expresses a cross-sectional area of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state; and L expresses a length (m) of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state.

28 (Original). The image forming apparatus as set forth in claim 21, further comprising:

a removable ink cartridge,

wherein:

the ink containing section is provided in the ink cartridge, and therein includes a porous ink absorbing body for retaining ink,

the image forming apparatus satisfies:

$\eta\cdot N\cdot R\cdot B>2\cdot\gamma\cdot h$

(coefficient $B=4.08\times10^{-4}$)

where η (N/m) expresses a surface tension of the ink; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; R expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state to the ink absorbing body before the ink absorbing body is contained in the ink containing section; h(m) expresses a head height of the ink, which is a maximum height of the ink containing section under an arbitrary orientation and is relative to the ink supplying throat in the vertical direction; and γ expresses a specific gravity of the ink.

29 (Original). The image forming apparatus as set forth in claim 21, further comprising:

a removable ink cartridge,

wherein:

the ink containing section is provided in the ink cartridge, and therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section, and

the image forming apparatus satisfies:

$\eta \cdot N' \cdot R' \cdot B > 2 \cdot \gamma \cdot h$

(coefficient $B = 4.08 \times 10^{-4}$)

where η (N/m) expresses a surface tension of the ink; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; R' expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed; h(m) expresses a head height of the ink, which is a maximum height of the ink containing section under an arbitrary

orientation and is relative to the ink supplying throat in the vertical direction; and γ expresses a specific gravity of the ink.

30 (Original). The image forming apparatus as set forth in claim 21, further comprising:

a detector for detecting whether or not the ink remains in the ink supplying path.

31 (Withdrawn). An image forming apparatus, comprising:

an ink containing section including a porous ink absorbing body for retaining ink; and

an ink supplying path for supplying the ink from the ink containing section to a print head,

wherein:

the ink supplying path therein includes a filter, and

the image forming apparatus satisfies:

$F'<1/(N\cdot R)$

($F'=F$ when an opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; and R expresses a compressibility, which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in a compressed state in the ink containing section to the ink absorbing body before the ink absorbing body is contained in the ink containing section.

32 (Withdrawn). The image-forming apparatus as set forth in claim 31, wherein

the image forming apparatus satisfies:

$D_N<F'<1/(N\cdot R)$

(F'=F when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where $D_N(m)$ expresses a diameter of the nozzle of the print head.

33 (Withdrawn). The image forming apparatus as set forth in claim 31, further comprising:

a detector for detecting whether or not the ink remains in the ink supplying path.

34 (Withdrawn). An image forming apparatus, comprising:

an ink containing section including a porous ink absorbing body for retaining ink; and

an ink supplying path for supplying the ink from the ink containing section to a print head,

wherein:

the ink supplying path therein includes a filter, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section, and

the image forming apparatus satisfies::

$F'<1/(N'\cdot R')$

(F'=F when an opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; and R' expresses a compressibility, which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed.

35 (Withdrawn). The image-forming apparatus as set forth in claim 34, wherein

the image forming apparatus satisfies:

$D_N<F'<1/(N'\cdot R')$

(F'=F when the opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where D_N(m) expresses a diameter of the nozzle of the print head.

36 (Withdrawn). The image forming apparatus as set forth in claim 34, further comprising:

a detector for detecting whether or not the ink remains in the ink supplying path.

37 (Original). An image forming apparatus, comprising:

an ink containing section including a porous ink absorbing body for retaining ink; and

an ink supplying path for supplying the ink from the ink containing section to a print head,

wherein:

the ink supplying path therein includes a filter, and

the image forming apparatus satisfies:

$4\cdot\eta/F'>|P\mu|+|Pi|$

$P\mu=(k/A)\cdot\{\mu_{TK}\cdot L\cdot (N\cdot R)^2/S\}\cdot Q$

(where the coefficient (k/A)=485)

$\mu_{TK}=\alpha\cdot\exp(\beta/T_K)$,

$\alpha=\mu_{25}/\exp(\beta/298)$,

$\beta=Ln\{0.42\cdot Ln(\mu_{25})+4.71\}/(1/273-1/298)$

(F'=F when an opening of the filter is circle; $F'=\sqrt{2}\cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; Pi (Pa) expresses a head pressure of the ink containing section which occurs when the ink is going to be supplied to the print head via the ink supplying throat when the ink containing section is filled with the ink; Pμ (Pa) expresses a pressure loss due to a viscosity

resistance of the ink containing section; η (N/m) expresses a surface tension of the ink; N (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is contained in the ink containing section; R expresses a compressibility which is a volume ratio of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state to the ink absorbing body before the ink absorbing body is contained in the ink containing section; S (m^2) expresses a cross-sectional area of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state; L expresses a length (m) of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state; μ_{25} (Pa·s) expresses an ink viscosity at 25°C; and μ_{TK} (Pa·s) expresses a viscosity at an arbitrary temperature T_K (K).

38 (Original). The image forming apparatus as set forth in claim 37, wherein:

the image forming apparatus satisfies:

$4 \cdot \eta / D_N - |Ph| > 4 \cdot \eta / F' > |P\mu| + |Pi|$

(F'=F when an opening of the filter is circle; $F' = \sqrt{2} \cdot F$ in other cases)

where D_N(m) expresses a diameter of the nozzle of the print head; and Ph (Pa) expresses a head pressure between an ink discharging throat of the nozzle and an ink supplying throat of the ink containing section.

39 (Original). The image forming apparatus as set forth in claim 37, further comprising:

a detector for detecting whether or not the ink remains in the ink supplying path.

40 (Original). An image forming apparatus, comprising:

an ink containing section including a porous ink absorbing body for retaining ink; and

an ink supplying path for supplying the ink from the ink containing section to a print head,

wherein:

the ink containing section therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section, and

the image forming apparatus satisfies:

$4 \cdot \eta / F' > |P\mu| + |Pi|$

$P\mu = (k/A) \cdot \{\mu_{TK} \cdot L \cdot (N' \cdot R')^2 / S\} \cdot Q$

(where the coefficient $(k/A)=485$)

$\mu_{TK} = \alpha \cdot \exp(\beta / T_K)$,

$\alpha = \mu_{25} / \exp(\beta / 298)$,

$\beta = Ln\{0.42 \cdot Ln(\mu_{25}) + 4.71\} / (1/273 - 1/298)$

($F'=F$ when an opening of the filter is circle; $F' = \sqrt{2} \cdot F$ in other cases)

where F(m) expresses a filtration accuracy of the filter; Pi (Pa) expresses a head pressure of the ink containing section which occurs when the ink is going to be supplied to the print head via the ink supplying throat when the ink containing section is filled with the ink; $P\mu$ (Pa) expresses a pressure loss due to a viscosity resistance of the ink containing section; η (N/m) expresses a surface tension of the ink; N' (cells/m) expresses a cell density of the ink absorbing body before the ink absorbing body is compressed; and R' expresses a compressibility, which is a volume ratio of the ink absorbing body when the ink absorbing body is compressed to the ink absorbing body before the ink absorbing body is compressed; S (m^2) expresses a cross-sectional area of the ink absorbing body when the ink absorbing body is contained in the ink containing section in a compressed state; L expresses a length (m) of the ink absorbing body when the ink absorbing body is contained in

the ink containing section in a compressed state; μ_{25} (Pa·s) expresses an ink viscosity at 25°C; and μ_{TK} (Pa·s) expresses a viscosity at an arbitrary temperature T_K (K).

41 (Original). The image forming apparatus as set forth in claim 40, wherein:

the image forming apparatus satisfies:

$4 \cdot \eta / D_N - |Ph| > 4 \cdot \eta / F' > |P\mu| + |Pi|$

where D_N(m) expresses a diameter of the nozzle of the print head; and Ph (Pa) expresses a head pressure between an ink discharging throat of the nozzle and an ink supplying throat of the ink containing section.

42 (Original). The image forming apparatus as set forth in claim 40, further comprising:

a detector for detecting whether or not the ink remains in the ink supplying path.